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Remarks

This application has been reviewed in light of the Office Action of November 5, 2003. Claims 1-19 are pending, and all claims are rejected. In response, the Specification is amended to correct a typographical error; the Abstract of the disclosure is amended to shorten it; new claim 20 is added; and the following remarks are submitted. Reconsideration of this application, as amended, is requested.

The Abstract of the Disclosure is objected to as being overly long, and has been shortened. Applicant asks that the Examiner reconsider and withdraw this ground of objection.

Claims 1, 4-7, and 9-12 are rejected under 35 USC 103 over Gooley US Patent 4,119,860 in view of Query US Patent 4,860,551. Applicant traverses this ground of rejection.

Gooley teaches a liquid level detector wherein the ends of a transmitting optical fiber and a receiving optical fiber are necessarily spaced apart from each other in the liquid. The ends of the transmitting optical fiber and the receiving optical fiber must be spaced apart because the principle of operation depends upon the propagation of light through the liquid parallel to surface of the liquid. The inventor had discovered that the amount of light transmitted between the spaced-apart ends of the transmitting optical fiber and the receiving optical fiber depends upon the proximity of the surface of the liquid. See, for example, col. 1, lines 61-63; col. 2, lines 49-62, col. 3, lines 42-44, and col. 8, line 56-col. 9, line 6; and Figures 1 and 4.

Query teaches a frost sensor using light transmission through a noted optical fiber. This device deals with determining the presence of the solid phase. Query has nothing to do with determining liquid levels, and in fact has nothing to do with liquids at all.

The explanation of the rejection suggests that "...it would have been obvious to

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a person of ordinary skill...to modify the Gooley device to have fiber notches." Applicant respectfully disagrees with this argument for several reasons.

First, Query is nonanalogous art. Stated alternatively, Query is not within the scope and content of the prior art that may be used in forming a sec. 103 rejection. Its teachings are therefore not properly combined with the teachings of Gooley. To be analogous art and properly used in forming a sec. 103 rejection, a reference must be concerned with the same problem as another reference and the claims which are being addressed. See, for example, Medtronic, Inc. v. Cardiac Pacemaker, Inc., 220 USPQ 97, 104 (Fed. Cir. 1983), stating: "Faced with a rate-limiting problem, one of ordinary skill in the art would look to the solutions of others faced with rate-limiting problems." In the present case, the inventor was concerned with a problem in measuring liquid levels, see the Background section of the Specification. Query has nothing at all to do with measuring liquid levels or in dealing with liquids at all, and therefore is not properly within the scope of the prior art. It is therefore not properly applied in rejecting the present claims.

Second, if notches are applied to the optical fibers in Gooley, the device will be become inoperable. In Gooley, the whole basis of the device is the propagation of light from the transmitting optical fiber, through the liquid parallel to the surface of the liquid, to the receiving optical fiber and thence to the sensing electronics, when the propagation is above and below the liquid level. See the discussion of Figure 4 of Gooley at col. 8, line 56-col. 9, line 6. If a notch is applied to the optical fiber, that notch will prevent light from passing to the sensing electronics if the notch is not immersed in the liquid. Consequently, the device of Gooley will not function in the manner depicted in Figure 4, and in fact will be inoperable. MPEP 2143.01 provides that, in constructing a sec. 103 rejection, the proposed modification cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference. MPEP 2143.02 requires that, in combining the teachings of two references, there must be a reasonable expectation of success in the combination. Both of these mandates would be violated in the proposed approach of combining the teachings of Query into those of Gooley as proposed in the explanation of the rejection.

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Third, the present rejection seeks to perform a hindsight reconstruction based upon unrelated references, which is technically unsupported and is legally improper. The case authority and the MPEP provide guidance on this point. The present rejection is a sec. 103 combination rejection. It is well established that a proper sec. 103 combination rejection requires more than just finding teachings in the references of the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levengood, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown

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in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

* * * * *

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App.& Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. The rationale urged in the explanation of the rejection, "increases the sensitivity of the sensor device", is not correct, because the

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incorporation of the notched fiber into the approach taught by Gooley will in fact render the teachings of Gooley inoperable as discussed earlier. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference.

Additionally, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Claim 1 recites in part:

"at least two solid optical conductors, each solid optical conductor including an outer surface having at least one reflective surface discontinuity of sufficient size to interfere with a total internal reflection of the solid optical conductor when the reflective surface discontinuity does not contact the liquid"

Neither reference has any such teaching. Gooley does not teach notches, and Query does not teach notches in contact with liquids.

The rejected independent claims all depend from claim 1, and are not taught for the reasons just discussed.

Applicant asks that the Examiner reconsider and withdraw this ground of

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rejection.

Claims 2, 3, and 13-19 are rejected under 35 USC 103 over Gooley in view of Vasei US Patent 3,120,125. Applicant traverses this ground of rejection.

Applicant incorporates the prior discussion of Gooley, and the prior discussion of the legal principles and requests applicable to the sec. 103 combination rejection.

Vasei discloses a liquid level detector in which light enters in a first optical fiber, is reflected from a prism surface depending upon whether the prism surface is immersed in liquid or not, passes to a second optical fiber and thence to an indicator. There is no teaching of notches or other type of surface discontinuity on the optical fibers.

Claims 2-3 depend from claim 1, which recites in part:

"at least two solid optical conductors, each solid optical conductor including an outer surface having at least one reflective surface discontinuity of sufficient size to interfere with a total internal reflection of the solid optical conductor when the reflective surface discontinuity does not contact the liquid"

Claims 13-19 have the same recitation.

Neither reference has any such teaching, inasmuch as neither reference teaches surface discontinuities of sufficient size to interfere with total internal reflection.

The attempted combination of teachings is improper for the reasons discussed in relation to the first rejection, which are incorporated here.

Applicant also respectfully traverses the logic of the construction of the rejection. The explanation of the rejection asserts that "Gooley reference discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach the use of a non-electrical light detector structure." To the contrary, the explanation of the rejection of claim 1 states that "Gooley...does not teach the use of a transverse surface notch on the optical fibers." These characterizations of the teachings of Gooley are inconsistent with each other.

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Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claim 8 is rejected under 35 USC 103 as unpatentable over Gooley in view of Vali US Patent 5,164,608. Applicant traverses this ground of rejection.

Applicant incorporates the prior discussion of Gooley, and the prior discussion of the legal principles and requests applicable to the sec. 103 combination rejection.

Vali teaches a fiber optical liquid level sensor for multiple liquids. This sensor is based on light leakage through the cladding of the optical fiber, see col. 1, line 68-col. 2, line 8. This is a completely different principle than that used by Gooley.

Claim 8 depends from claim 1, which recites in part:

"at least two solid optical conductors, each solid optical conductor including an outer surface having at least one reflective surface discontinuity of sufficient size to interfere with a total internal reflection of the solid optical conductor when the reflective surface discontinuity does not contact the liquid"

Neither reference has any such teaching, inasmuch as neither reference teaches surface discontinuities of sufficient size to interfere with total internal reflection.

The attempted combination of teachings is improper for the reasons discussed in relation to the first rejection, which are incorporated here.

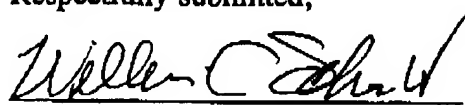
Applicant also respectfully traverses the logic of the construction of the rejection. The explanation of the rejection asserts that "Gooley reference discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach a light detector disposed at the first end of an optical fiber, and a reflector disposed at the second end of the optical fiber." To the contrary, the explanation of the rejection of claim 1 states that "Gooley...does not teach the use of a transverse surface notch on the optical fibers." These characterizations of the teachings of Gooley are inconsistent with each other.

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Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Applicant submits that the application is now in condition for allowance, and requests such allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William C. Schubert", is written over a horizontal line.

William Schubert

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